



**ACS.CCLP1  
SAFETY ASSESSMENT CRITERIA  
INITIAL & RE-ASSESSMENT  
DOMESTIC  
LPG**

## Introduction

This Core assessment now incorporates the criteria for combustion performance analysis for delivery from 1<sup>st</sup> April 2012. This packaged Assessment shall be delivered from 1<sup>st</sup> April 2012 and shall be downloaded to the national database using the assessment codes CCLP1 + CPA1. This will ensure the Candidate's competence in combustion performance analysis is recognised.

CCLP1 shall be associated with at least one of CCLP1 PD, RPH, LAV, and B.

Tests gas safety competence in core LPG work.

Candidates subsequently sitting only CCLP1 B will not need to prove competency in sections related to LPG metering or the commissioning of OPSO/UPSO valves from the following competence criteria.

Group 1. Part A. Comprises:

1. Gas safety legislation and Standards
2. Gas emergency actions and procedures.
3. Products and characteristics of combustion (inc. combustion performance analysis)
- 3a. Characteristics of LPG.
- 3b. Supply pressures. Operation and positioning of emergency isolation, flow control and valves for cylinders.
- 3c. Cylinder location, safety and sizing.
5. Installation of pipework and fittings.
- 6a. Tightness testing and purging (PD, LAV and RPH).
- 6b. Tightness testing and purging (B).
8. Unsafe situations, use of emergency notices and warning labels.
11. Operation and checking of appliance gas safety devices and controls.
12. Chimney Standards.
13. Chimney inspection and testing.
14. Installation of open, closed, balanced and fan assisted chimneys.
15. Re-establish existing gas supply and re-light appliances.

CBs may adopt Competence and Criteria numbering different to that used in this document.

CB documentation may adopt wording for criteria different to that used in this document, provided the meaning is unaffected.

## Range

All LPG gas fittings.

## Pre-requisites

### ***Initial***

**All Initial Assessment require suitable proof of gas work training and experience**

CCLP1 (or a suitable Changeover assessment or aligned QCF or S/NVQ) is the pre-requisite for all other domestic LPG safety assessments.

### ***Re-assessment***

## References and normative documents

MIs.

All relevant documents as listed in the Legislative, Normative & Informative Document List (LINDL), Inc.:

- BS EN ISO 10239:2014
- IGEN/UP/1B Edition 3
- HSL56
- GIUSP.
- PD 54823: 2016

ACS.SMB.003.ACRND identifies Normative Documents that should be held by ACs.

Where a reference point (REF) is listed in this criteria this is only a guide to where the criteria could be resourced, therefore the REF may not be exhaustive.

## Abbreviations

AC. Assessment Centre  
 AIV Appliance Isolation Valve  
 CB. Certification Body  
 B. Boat  
 HP. High pressure  
 I. Initial  
 LAV. Leisure accommodation vehicle  
 LDF. Leak detection fluid  
 LP. Low pressure  
 MIs. Manufacturer's/manufacturers' instructions  
 OP. Operating pressure  
 OQ. Oral questioning  
 OPSO. Over-pressure safety cut-off  
 PD. Permanent dwelling  
 R. Re-assessment  
 Ref. Reference  
 RPH. Residential park home  
 SSOV. Safety shut-off valve  
 UPSO. Under-pressure safety cut-off.

## 1. Gas safety legislation and Standards

KNOWLEDGE AND UNDERSTANDING			REF	I	R
1.	<b>HSL56:</b>				
(i)	Reg.2	General interpretation and application 2(1) to (5)		√	
(ii)	Reg.3	Qualification and supervision 3(1),(2),(3),&(6)		√	
(iii)	Reg.4	Duty on employer		√	
(iv)	Reg.5	Materials and workmanship 5(1) to (3)		√	
(v)	Reg.6	General safety precautions 6(1) to (9)		√	
(vi)	Reg.7	Protection against damage 7(1) to (3)		√	
(vii)	Reg.8	Existing gas fittings 8(1) to (3)		√	
(viii)	Reg.25	Interpretation of Part E		√	
(ix)	Reg.26	Gas appliances - safety precautions 26(1) to (9)		√	
(x)	Reg.35	Duties of employers and self-employed persons		√	
(xi)	Reg.36	Duties of landlords 36(1) to (12)		√	

## 2. Gas emergency actions and procedures

KNOWLEDGE AND UNDERSTANDING			REF	I	R
1(a)	priorities of actions and responsibilities			√	
1(b)	dealing with gas leakage with fire and safety/fire precautions for cylinders			√	
1(c)	<b>dealing with gas leakage without fire:</b>				
2.	specific gravity and its effect in relation to air e.g. search techniques			√	
3.	preventing/reducing dangerous concentrations of gas in atmosphere and at low level			√	
4.	advice to occupants			√	
5.	HSL56: Reg.9 Emergency controls 9 (5)			√	

## 3. Products and characteristics of combustion

PERFORMANCE CRITERIA			REF	I	R
1.	<b>visually inspect flame picture of burners and identify those indicating:</b>				
(i)	complete combustion			√	√
(ii)	incomplete combustion			√	√
2.	<b>identify incomplete combustion in an open flue appliance:</b>				
(i)	around appliance location			√	√

(ii) in appliance		√	√
<b>3. CO detectors and indicators:</b>			
(i) identify detectors and indicators		√	√
(ii) installation – locations		√	√
(iii) commissioning and maintenance of detectors (audible, readable, visual)		√	√
<b>4. Combustion performance analysis:</b>			
(i) inspect appliances of 3 flue types intended for combustion performance testing to ensure installation, flueing and ventilation are to MIs		√	√
(ii) inspect appliances for obvious signs of damage and factors that may affect combustion performance		√	√
(iii) check OP and/or heat input of each appliance		√	√
(iv) light each appliance and visually inspect combustion performance		√	√
(v) check analyser is suitable, correctly assembled and calibrated		√	√
(vi) select correct types of sampling probe for each appliance		√	√
(vii) turn on analyser and prepare for use to MIs		√	√
(viii) correctly position probes for sampling products from each appliance		√	√
(ix) adjust position of probe to obtain highest steady value of CO <sub>2</sub> or lowest steady value of O <sub>2</sub> for each appliance		√	√
(x) read and record CO/CO <sub>2</sub> ratios for each appliance		√	√
(xi) adjust and re-test appliance if CO/CO <sub>2</sub> ratio levels are too high		√	√
<b>KNOWLEDGE AND UNDERSTANDING</b>	<b>REF</b>	<b>I</b>	<b>R</b>
1. main constituents of complete and incomplete combustion		√	
2. air requirements for complete combustion		√	
<b>3. causes of appliance incomplete combustion at:</b>			
(i) burner		√	
(ii) combustion space		√	
(iii) heat exchanger		√	
(iv) flue		√	
4. symptoms of CO poisoning		√	
5. advice to a person who describes symptoms of being affected by products of combustion or when indicator/detector has activated		√	√
6. other sources of CO and CO <sub>2</sub> in dwellings		√	√
7. ambient levels of CO in atmosphere		√	√
8. levels of CO within dwellings and effect on electronic detectors		√	√
9. causes of activation of CO detectors and indicators		√	√
10. ambient levels of CO <sub>2</sub> in atmosphere		√	√
11. critical levels of CO <sub>2</sub> that could cause vitiation effecting combustion process		√	√
12. movement of products of combustion within properties and its effects		√	√
12a advice to be given when a CO detector has activated		√	√
13. manufacturing standards for electronic CO detectors (alarms)		√	√
14. identification of unsafe situation of combustion products that could enter a premises		√	√
15. additional allowance for CO levels for gas cookers		√	√
<b>16. combustion performance analysis:</b>			
(i) re-testing appliances when new components have been fitted		√	
(ii) unsafe situation category for flued appliance that fails test		√	
(iii) unsafe situation category for flueless appliance that fails test		√	
(iv) understanding of action levels for gas appliances		√	
(v) actions if CO/CO <sub>2</sub> ratio remains above suitable performance levels after adjustment		√	
(vi) types of portable combustion analysers		√	√

### 3a. Characteristics of LPG

<b>KNOWLEDGE AND UNDERSTANDING</b>	<b>REF</b>	<b>I</b>	<b>R</b>
1. types of commercial LPG (propane, butane )		√	
2. storage pressures for both gas types and its relation to temperature		√	
3. specific gravity of LPG vapour and its effect in relation to air and Natural Gas		√	
4. vaporisation of LPG liquid and off-takes - effects of temperature		√	
5. limits of flammability		√	
6. calorific value		√	

**3b. Cylinder location, safety requirements and sizing**

<b>KNOWLEDGE AND UNDERSTANDING</b>		<b>REF</b>	<b>I</b>	<b>R</b>
<b>1. safety requirements, sizing of cylinders:</b>				
(i)	sizes and marking of common Propane and Butane cylinders commercially available and recommended off-takes to match appliance demand		√	
(ii)	linking cylinders through manifolds		√	
(iii)	areas where cylinders are not to be located		√	
<b>2. HSL56:</b>				
(i)	Reg.6 General Safety Precautions 6 (8)		√	
(ii)	Reg.6 General Safety Precautions 6 (9)		√	

**3c. Supply pressures - operation and positioning of emergency isolation, flow control and valves for cylinders**

<b>PERFORMANCE CRITERIA</b>		<b>REF</b>	<b>I</b>	<b>R</b>
<b>1. LPG regulators :</b>				
(i)	turn off all appliances		√	√
(ii)	turn off gas supply		√	√
(iii)	zero pressure gauge and connect to appropriate test point		√	√
(iv)	identify manufacture standard of regulator; re-establish gas supply, observe and record lock up pressure is in accordance with BS 6891 or BE EN 1949 (LAV)	BS 6891: 2015 10.3b & Table 7	√	√
(v)	turn on and light sufficient burners and observe and record OP is in accordance with BS 6891 or BE EN 1949 (LAV)	BS 6891: 2015 10.3a & Table 7	√	√
(vi)	remove gauge, re-seal test point and test for gas tightness		√	√
<b>KNOWLEDGE AND UNDERSTANDING</b>		<b>REF</b>	<b>I</b>	<b>R</b>
<b>1. recognition of supply pressures from gas storage cylinders:</b>				
(i)	HP stage		√	
(ii)	LP stage		√	
<b>2. operation and positioning of gas storage cylinder fittings:</b>				
(i)	pressure relief valve		√	
(ii)	cylinder valve		√	
3.	types and sizing of gas regulators		√	
4.	operation and positioning of emergency isolation valves		√	
5.	operation and positioning of automatic changeover valves for cylinders	BS 6891: 2015 E.2.3	√	
6.	HSL56: Reg.14 Regulators 14 (2) to (7)		√	
7.	min./max. outlet pressures for BS EN 12864, BS EN 13785 & BS EN 16129 regulators as listed in BS 6891	BS 6891: Table 7 & TB 080	√	√
8.	lock-up pressures for BS EN 12864, BS EN 13785 & BS EN 16129 regulators	BS 6891: Table 7 & TB 080	√	√
9.	identifying causes of over pressure conditions		√	√
10.	operation/positioning/visible indicators (where applicable) of OPSOs		√	√
11.	procedures when OPSO has operated (MI's & Gas Supplier data sheets)	MI's	√	√
12.	requirement for over pressure shut off (OPSO) devices	BS 6891: 2015 E.1.1	√	√
13.	identifying when UPSO/OPSO commissioning needs to be made	BS 6891: 2015 10.3.4	√	√
14.	safety and security of single supply gas storage vessels and controls			√
15.	safety requirements for termination location of limited relief valve	BS 6891: 2015 E.2.2 / E.2.8 Table E2	√	√
16.	requirement for under pressure shut off (UPSO) device on installations supplied by a bulk gas storage vessel	BS 6891: 2015 E.1.1	√	√

**5. Installation of pipework and fittings. Range of pipe sizes: 6 mm to 28 mm**

PERFORMANCE CRITERIA		REF	I	R
1.	join threaded pipe joints using appropriate fittings, methods and agents		√	
2.	join copper or stainless steel pipe using appropriate mechanical (compression) fittings, methods and agents	BS 6891 2015: 7.3	√	
3.	connect replacement HP hoses. Fabricate LP hoses using appropriate clips, fittings, agents		√	√
3a.	reconnect cylinder and remove temporary earth continuity bond			√
4.	use of temporary continuity bond		√	
5.	ensure work carried out is gas tight		√	√
6.	purge meter and pipework of air (meter not applicable to (B)) Apply any protective coating (OQ)		√	√
7.	identify installation pipework safety defects		√	√
KNOWLEDGE AND UNDERSTANDING		REF	I	R
1.	copper pipe and fittings; standards, suitability and use	BS 6891 2015: 6.4, 7.2, 7.3	√	
2.	flexible hoses (e.g. colour band on cooker hose) and rigid connections standards, suitability and use		√	
3.	Installation of flexible hoses, tubing, assemblies and their connections:			
i	Standards	BS 6891: 2015 9.1.8 & Fig 25	√	√
ii	Length	BS6891: 2015 9.1.2, 9.2 & 9.3	√	√
iii	Condition	BS 6891: 2015 9.1.4	√	√
iv	Service life	9.1.9	√	√
4.				
5.	pipe sizing to appliance requirements – inc. theoretical exercise (not applicable with 'Boats' only)	BS 6891: 2015 Annexe A	√	√
6.	jointing and cleaning agents for copper pipework		√	
7.	pipe supports, clips and fixing for copper, stainless and galvanised steel pipework	BS 6891 2015: 8.8 Table 4	√	
8.	sleeving pipework		√	
9.	precautions and protection when installing pipework		√	
10.	external surface mounted installation pipework		√	
11.	main equipotential bonding		√	
12.	precautions when using naked flames on pipework previously containing LPG		√	
13.	siting and installation for gas controls and isolation valves		√	
14.	making and breaking gas connections on appliances		√	
15.	ducts purposely designed to contain gas pipes		√	
16.	<b>HSL56:</b>			
(i)	Reg.10 Equipotential bonding		√	
(ii)	Reg.18 Safe use of pipes 18 (1) and (2)		√	
(iii)	Reg.19 Enclosed pipes 19 (1) to (6)		√	
(iv)	Reg.20 Protection of buildings		√	
(v)	Reg.22 Testing and purging of pipes 22 (1) to (3)		√	
17.	MP and LP meter locations which do not comply with BS 6400-3		√	√
18.	location and sizing vent pipes on MP meter installations		√	√
19.	gas meters supplying mobile dwellings and boats		√	√
20.	where a number of primary meters serving multi-occupancy buildings are grouped		√	√
21.	notices fitted to meter installations, meter housings		√	√

**6a. Tightness testing (PD, LAV and RPH). Total IV ≤ 0.035 m<sup>3</sup>. OP ≤ 37 mbar**

Up to 1¼ (steel) and/or 35 mm (copper)

PERFORMANCE CRITERIA		REF	I	R
<b>1.</b>	<b>Testing new and existing installations with gas:</b>			
(i)	visually inspect the installation to ensure all sections to be tested are connected, all joints are correctly made and no open ends		√	√
(ii)	check appliances burner control taps are turned off, ensure AIVs are open and cooker fold down lids are raised to ensure the SSOV is open		√	√

(iii)	turn off the gas installation at the appropriate valve		√	√
(iv)	connect the pressure gauge to a suitable pressure test point on the outlet of the supply control valve and the final regulator		√	√
(v)	carry out a let-by test of the closed supply control valve:			
	• adjust the pressure to between 7 and 10 mbar		√	√
	• reset any UPSO to release upstream pressure and re adjust if the pressure exceeds 10 mbar		√	√
	• close the supply control valve where necessary, note the gauge reading		√	√
(vi)	check for any perceptible movement (rise) of the gauge reading over the next 1 minute period (if UPSO fitted operate at the end of the 1 minute period)		√	√
(vii)	if no perceptible movement is observed then the valve is not letting by			
(viii)	if pressure rise is observed, check valve by disconnecting its outlet union and applying LDF to valve barrel (OQ if valve does not let by practically)		√	√
(ix)	on satisfactory completion of let-by test slowly raise the pressure in the installation to the appropriate tightness test pressure indicated in Table 4 (IGEM/UP/1B Edition 3)		√	√
(x)	close the supply control valve		√	√
(xi)	allow 1 minute stabilisation; if necessary re-adjust pressure to the tightness test pressure - do not proceed until a stable reading has been achieved		√	√
(xii)	check for no perceptible movement (fall) of the gauge over the next 2 minute period		√	√
(xiii)	if an installation fails test, trace and repair escape and re-test installation (OQ)		√	√
(xiv)	if tightness test is successful, remove pressure gauge and re-seal test point		√	√
(xv)	test pressure test point; ECV/AECV outlet connection; regulator connections and, where appropriate, MIV connections with LDF		√	√
(xvi)	purge installation		√	√
(xvii)	record test results		√	√
2.	Locate and repair a gas escape		√	√
<b>KNOWLEDGE &amp; UNDERSTANDING</b>		<b>REF</b>	<b>I</b>	<b>R</b>
1.	Correct reading of pressure gauges		√	√
2.	Locating escapes		√	√
3.	Actions for dealing with valves letting by		√	√
3a.	Effects of flexible connections used to connect cylinders on let-by tests		√	√
4.	Use of electronic pressure gauge (calibration requirements)		√	√
5.	Air test pressure requirements for butane/propane installations		√	√
6.	Installation test pressures for propane/butane		√	√
7.	Permissible pressure drops for existing LPG installations with appliances IGEM/UP/1B Edition 3 (Appendix 8)		√	√
8.	Actions to be taken where a cylinder valve is found to be faulty		√	√
9.	Actions to take ensure lock up does not affect the tightness test		√	√
10.	Additional requirements for re-testing installations that may contain air or a gas/air mixture following an initial test		√	√

### 6b. Tightness testing. Boats, yachts and other vessels

(the Air testing within PD54823: 2016 & N ISO 10239 are now identical, however for ease of use, detail and consistency the use of PD 54823: 2016 is referenced)

<b>PERFORMANCE CRITERIA</b>		<b>REF</b>	<b>I</b>	<b>R</b>
<b>PD54823: 2016 Small craft – LPG systems</b>				
<b>1. LPG installation system tests with appliances connected (using air)</b>				
(i)	test with air from gas regulator connection to closed burner valves at appliances	PD 54823 10.2.3 (a)	√	√
(ii)	cap off all other open points but the one point to insert air	PD 54823 10.2.4. (b)	√	√
(iii)	connect a suitable calibrated "U" gauge and a in line test tee if needed.	PD 54823 10.2.4. (c)	√	√
(iv)	introduce air into system to a test pressure 3 x NOP for gas to be used	PD 54823 10.2.4.	√	√

(v)	(≤150 mbar) and isolate pressurising source.	( C & d)		
(v)	allow 5 minutes pressure equilibrium & note the reading	PD 54823 10.2.4. (e )	✓	✓
(vi)	observe gauge for further 5 minutes	PD 54823 10.2.4. (g )	✓	✓
(vii)	pressure should remain constant	PD 54823 10.2.4. (h )	✓	✓
(viii)	if pressure has fallen check each joint with LDF and retest	PD 54823 10.2.4. (i)	✓	✓
(ix)	A non-discernible drop is achieved and recorded	PD 54823:2016 10.2.4 (J)	✓	✓
(ix)	A Tightness testing of the high pressure side should be completed at this point	10.3 to 10.3.2 a, b, c, d, e ,f ,g & h	✓	✓
<b>2</b>	<b>Commissioning testing, appliances can be disconnected or Isolated off on their shut off valve , the system purged of air and charged with LPG .</b>	PD10.2.5 D 54823		
a	purging the supply line	Annex D, D1	✓	✓
b	Testing of the LPG supply line	Annex D D.2 D .2.1.	✓	✓
(i)	turn off all appliances and isolate supply	D.2.5. a)	✓	✓
(ii)	connect U gauge to test fitting, if present, or in-line test tee	D.2.5. b)	✓	✓
(iii)	gradually turn on main shut-off valve until regulator reaches lock-up pressure; close main shut-off valve	D.2.5. c). 1, 2	✓	✓
(iv)	light one appliance and note drop in gauge. When pressure falls <del>to</del> 5 mbar, close appliance tap and isolation valve	D.2.5. c). 3.	✓	✓
(v)	allow 5 minutes stabilisation, record reading on gauge	D.2.5. c). 4.	✓	✓
(vi)	allow further 2 minutes, then re-record reading on gauge	D.2.5. c). 5	✓	✓
(vii)	if reading in(vi) is not higher than reading in (v), there is no let-by leakage	D.2.5. d). 6, 1,2,3,	✓	✓
(viii)	What if a discernible pressure drops occurs or there is a smell of gas	D.2.5. e) 1, 2 & 3	✓	✓
<b>3.</b>	<b>Testing of the LPG supply line with appliances PD 54823:2016 Annex D2</b>			
(i)	In preparation turn off all appliances but leave on all appliance isolation valves; ensure any cooker fold down lids with SSOV are raised – isolate supply	D.2.4	✓	✓
(ii)	connect U gauge to test fitting, if present, or in-line test tee	D.2. 5 (a & b)	✓	✓
(iii)	turn on main shut-off valve to lockup pressure, then close supply valve;	D.2. 5 (c 1 & 2 )	✓	✓
(iv)	light one appliance; allow pressure to fall to 30 mbar for propane or 20 mbar for butane.	D.2. 5 (c 3 ) note 1 & 2	✓	✓
(v)	switch off appliance and leave for ≥ 5 minutes temperature stabilization – record pressure	D.2. 5 (c 4 )	✓	✓
(vi)	Wait a further 2 minutes and again record the U gauge reading	D.2. 5 (c 5 )	✓	✓
(vii)	there should be no discernible pressure drop in system(pipework only) or within given values (with appliances connected and tested)	D.2. 5 (c 6 )	✓	✓
(viii)	After proving the installation is acceptable	D.2.5.( h )	✓	✓
(ix)	test joints made after test, with LDF	D.2.5. (i)	✓	✓
<b>4.</b>	<b>Tightness testing the high pressure side at this point if needed</b>	10.3 to 10.3.2 a,b,c,d,e,f,g & h	✓	✓
<b>KNOWLEDGE AND UNDERSTANDING</b>		<b>REF</b>	<b>I</b>	<b>R</b>
1.	correct reading of pressure gauges	D.2.1	✓	✓
2.	use of electronic pressure gauge (calibration)	D.2.2	✓	✓
3.	locating escapes	D.2. 5 (e 1,2 & 3 )	✓	✓
4.	dealing with valves letting by, temperature rise or anomalies caused by cylinder hose pressures equalizing.	D.2. 5 (c 6 )	✓	✓
5.	determining permissible pressure loss	Annex D Table D1	✓	✓
6.	tightness testing principles	Section 10 and Annex D	✓	✓



**8. Unsafe situations, use of emergency notices and warning labels**

PERFORMANCE CRITERIA	REF	I	R
1. identify unsafe situations as ID & AR		√	√
2. identify defective appliance(s)/installation(s)		√	√
3. label unsafe appliance(s)/installation(s) appropriately		√	√
4. demonstrate procedure for each unsafe installation as GIUSP			√
5. complete warning/advisory notices; explain and issue to appropriate persons			√
6.			
KNOWLEDGE AND UNDERSTANDING	REF	I	R
1. explain dealing with ID	Fig 1 & 6.1 GIUSP Edition 7.1	√	√
2. explain dealing with AR	Fig 1 & 6.2 GIUSP Edition 7.1	√	√
2a explain dealing with AR installations/appliances when turning off does not remove the risk	Fig 1 & 6.2.2 GIUSP Edition 7	√	√
3. explain dealing with situations that do not meet current standards but are not unsafe	Foreword GIUSP Edition 7	√	√
5. <b>clearly identify correct notices and labels to be used:</b>			
(i)			
(ii) warning notice forms		√	
(iii) advisory notices – appliance use, electrical bonding, landlord records		√	√
6. situations reportable under RIDDOR. Explain reporting to HSE		√	√
7. HSL56: Reg.34 (1) - (3)- Procedures		√	
8. <b>GIUSP:</b>			
(i)			
(ii) overall scope		√	√
(iii) gas incidents		√	√

**11. Operation and checking of appliances gas safety devices and controls**

PERFORMANCE CRITERIA – This PC applies only to those safety controls listed in Tables 1 and 3 of the Practical Provision (ACS.SMB.005.PP.TABLE1)	REF	I	R
1. identify gas safety device/control		√	√
2. check correct operation of each gas safety control/device to MIs or normative documents		√	√
3. identify gas safety controls/devices which are not working correctly by operation, testing and/or visual, audible methods		√	√
4. demonstrate diagnosis of faulty gas safety device/control		√	√
5. isolate gas and/or electrical supplies, where necessary		√	√
6. repair or replace faulty gas safety control/devices		√	√
7. re-establish gas and/or electrical supplies, where necessary		√	
8. ensure work carried out is gas tight		√	
9. confirm correct operation of repaired/replaced gas safety controls/devices to MIs		√	
KNOWLEDGE AND UNDERSTANDING	REF	I	R
1. appliance data critical for spare part identification of gas safety control/devices		√	
2. demonstrate/explain principle of operation of each control/device		√	
3. explain sequence of operation of controls/devices e.g. liquid expansion thermostat in line with a liquid expansion FSD		√	

**12. Chimney Standards**

KNOWLEDGE AND UNDERSTANDING	REF	I	R
1. classification of gas flue systems - flueless, open flue, room sealed		√	√
2. <b>chimneys and open gas flue systems: natural draught:</b>			
(i) construction and operation of a chimney /open flue		√	√
(ii) types of open flue material – cement based, metallic		√	√
(iii) methods of jointing open flue and chimney components		√	√
(iv) clearances when passing through combustible material		√	√
(v) special requirements for terminals and/or guards – protection against wildlife		√	√
3. <b>HSL56:</b>			
(i) Reg.27 Flues (1) to (5)		√	
(ii) Reg.30 Room-sealed appliances (1) to (3)		√	

(iii) Reg.32 Flue dampers (2) to (3)		√	
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### 13. Chimney inspection and testing

PERFORMANCE CRITERIA	REF	I	R
<b>1. visually inspect chimney/flue throughout its length:</b>			
(i) flue is fit for intended appliance and is classified		√	√
(ii) flue serves only one room or appliance <i>N.B. Assessors may choose to use underpinning question/s to cover this PC</i>		√	√
(iii) secondary flue is correctly positioned and in good condition		√	√
(iv) terminal position meets current legal requirements		√	√
(v) joint between terminal and flue system is weather tight		√	√
(vi) flue is adequately supported		√	√
(vii) flue is clear of obstructions		√	√
(viii) flue is not corroded or cracked		√	√
(ix) use of bends meets current requirements		√	√
(x) appliance draught diverter is correctly installed and in good condition		√	√
(xi) flue joints are correctly made		√	√
(xii) there are no visual signs of spillage of combustion products		√	√
(xiii) space allocated between flue and combustible material is correct		√	√
(xiv) seals on balanced natural and fan assisted flues in good condition and correctly installed		√	√
(xv) balanced flue appliance seals in good condition and correctly installed		√	√
<b>2. apply flue flow test (smoke test):</b>			
(i) check adequate air supply is available to MIs		√	√
(ii) close windows and doors in room or compartment where flue is to be tested		√	√
(iii) pre-warm flue, if necessary		√	√
(iv) position smoke pellet at base of flue being tested		√	√
(v) check smoke is seen to discharge from correct chimney or terminal only		√	√
(vi) check there is no entry of smoke into room/compartment or any other room/compartment, roof space or any part, external to flue		√	√
(vii) rectify any fault found and re-test flue		√	√
<b>3. apply spillage test with appliance connected and in operation:</b>			
(i) close windows, adjustable vents and doors in room/compartment containing appliance to be tested		√	√
(ii) check ventilation requirements; any mechanical ventilation supplied to room other than combustion air is turned off		√	√
(iii) demonstrate procedures when an extract fan is installed in the property		√	√
(iv) with appliance in operation at its set input setting, apply smoke match to appropriate position in appliance according to MIs		√	√
(v) check smoke is correctly pulled into appliance flue/chimney system		√	√
(vi) rectify any fault found and re-test appliance (OQ re. testing for spillage with all interconnecting doors open with all fans in operation)		√	√
4. identify defective flue installations - record incorrect flue and ventilation			√
5. identify defective chimney/flue installations		√	√
<b>6. Check room sealed fan assisted positive pressure appliance installation:</b>			
(i) identify positive pressure appliance		√	√
(ii) fit appliance case (case screws, seals, items trapped between case seal and appliance etc.)		√	√
7. check room sealed fan assisted positive pressure appliance case seals for possible leakage of products of combustion		√	√
(i) set appliance controls to their highest setting and light burner		√	√
(ii) initially check case seal by running hand around boiler case and back plate (OQ re. corroded/damaged back plate)		√	√
(iii) light a match/taper and position flame very close to case seal or any possible leakage point		√	√
(iv) move match/taper around entire seal, inc. bottom of case		√	√
(v) identify any leakage of products of combustion		√	√
8. inspection requirements for fanned flues in voids	TB 008 ED3 2013	√	√
<b>KNOWLEDGE AND UNDERSTANDING</b>	<b>REF</b>	<b>I</b>	<b>R</b>
1. types of room sealed positive pressure combustion chamber appliances		√	
2. causes of leakage of products of combustion from room sealed fan assisted positive pressure appliances		√	
3. checks on room sealed fan assisted positive pressure appliances prior to fitting the case, inc. back plate inspection, appliance case screws, case seals etc.		√	
4. installation and spillage testing new or used appliances when MIs are not available		√	

5.	alternative methods of compliance when inspection hatches are not available for flues in voids	TB 008 ED3 2013	√	√
6.	Actions required where fumes, smells or spillage have been reported/encountered	BS7967 2015 6.1	√	√

#### 14. Installation of open, closed, balanced and fan assisted chimneys

PERFORMANCE CRITERIA		REF	I	R
1.	<b>cement based and/or metallic rigid:</b>			
(i)	chimney /flue pipe jointing		√	√
(ii)	chimney /flue pipe adapters		√	√
(iii)	chimney /flue pipe bends		√	√
(iv)	chimney /flue pipe supports		√	√
(v)	spacing between flue pipe or chimney and combustible material		√	√
2.	plastic flue pipe - chimney /flue pipe jointing		√	√
3.	<b>identify room sealed flue installation –correct and incorrect installations:</b>			
(i)	chimney /flue duct cuts		√	√
(ii)	assemble, adjust and seal to MIs		√	√
(iii)	chimney/ flue terminal guards against the room sealed flue terminal			√
KNOWLEDGE AND UNDERSTANDING		REF	I	R
1.	insulation for open flues /chimneys		√	
2.	chimney /flue guards for room sealed flue terminals		√	√
3.	heat shields for room sealed flue terminals		√	√

#### 15. Re-establish existing LPG supply and relight appliances

PERFORMANCE CRITERIA		REF	I	R
1.	check installation is gas tight		√	√
2.	re-establish gas supply		√	√
3.	check changeover valve is operating correctly		√	
4.	<b>appliance(s) is/are visually checked and re-lit inc.:</b>			
(i)	purge system and appliances of air		√	√
(ii)	re-light appliance(s)		√	√
(iii)	confirm satisfactory operation of user controls		√	√
(iv)	visually inspect appliance installation(s) for unsafe situations		√	√
KNOWLEDGE AND UNDERSTANDING		REF	I	R
1.	describe correct action when an un-commissioned appliance is identified		√	
2.	confirm actions if pipework and appliance(s) are not tested (commissioned) when gas supply is re-established		√	
3.	HSL56: Reg.33 Testing of appliances 33(1) to (3)		√	